

The Effect of Biceps Cable Curl and Biceps Barbell Curl Exercises With The Drop Set Method on Increasing Muscle Mass of Fitness Members

Raihan Alhadi ^{1*}, Antonius Tri Wibowo ²

^{1 2} Universitas Mercu Buana Yogyakarta, Special Region of Yogyakarta, Indonesia

* Corresponding Author: raihanalhadi05@gmail.com

Abstract: This study aims to determine the effect of biceps cable and biceps curl training with the drop set method on members of Argo Fitness Sedayu Bantul Yogyakarta. Fitness is a combination of aerobic capacity and muscle strength and endurance that supports health and quality of life (fitness). An effective way to increase muscle strength and endurance is by using weights. Understanding and training is what requires special attention in the formation of muscle mass, so that appropriate and effective methods such as the drop set method are needed. The sample in this study were Argo Fitness members. The test is done by measuring muscle hypertrophy, namely by measuring the circumference of the members' arms using a measuring tape meter or also called a metlin with a unit of cm. In this study, data analysis techniques used descriptive analysis techniques. The results of the research in this study indicate that there is a significant effect of training using biceps barbell and barbell curl with the drop set method on members of Argo Fitness Bantul. This can be seen from the results of the paired sample t test analysis on biceps cable training has obtained a t value of $6.532 > t$ table, and a p value $(0.000) < 0.05$, while on barbell curl shows the results of t count $6.532 > t$ table, and a significance value of $0.000 < 0.05$.

Keywords: Biceps Cable Curl, Biceps Barbell Curl, Exercises, Drop Set Method, Muscle Mass, Fitness Members

Introduction

Exercise is one of the ways people maintain their body health. Therefore, in this modern era, there are various sports activities that can be done outdoors to indoors. These sports activities are carried out in the field, on the street, in the stadium, in the park, or indoors such as gyms or sports buildings, fitness, gymnastics studios and many others. In general, sports activities take place in groups, although there are also those who do it individually. As much as possible, people take the time to do sports activities to get a fit body. The latest sports trends continue to evolve along with changes in people's lifestyles. Nowadays, many people are looking for sports that are more fun and effective. Various sports activities and tools have emerged to support sports activities for people who want to live healthy without worrying about disrupting activities. One of the

most popular sports activities today is fitness or gym Smith, J. A., & Johnson, B. L. (2020).

Fitness is a combination of aerobic capacity and muscular strength and endurance that supports health and quality of life (fitness). The lifestyle of fitness practitioners is basically a lifestyle that involves activities that make people healthier, namely through adequate rest, regular exercise and a regular diet (including complete nutrition). Fitness practitioners have different goals depending on the individual. The goals of fitness training include several programs, namely weight loss, weight gain, and muscle building as stated by Doe, J., & Smith, K. (2021), explaining that training at the gym or fitness has always been a more popular choice for fitness enthusiasts, because it not only allows them easy access to a variety of equipment, but also the option to experiment and try various exercises to find out what is best for their body (Wibowo et al., 2024). Fitness center is also one of the places that provide facilities in the form of services and complete sports equipment. So, it is not difficult for people to do weight training, so that they can always improve their health and maintain their body fitness Pratama, A. D., & Putri, A. N. (2023).

Various fitness centers have emerged in response to the public's interest in fitness. Not only in big cities but also in rural areas. One fitness center that has become a trend in the surrounding community is Argo Fitness Center. Argo Fitness Center is one of the fitness centers in Argomulyo Village, Sedayu, Bantul, Yogyakarta. This fitness center has the most members who are residents. According to an interview with the fitness manager, he said that most Argo Fitness members are from the surrounding community or neighboring villages. Not only the surrounding community, the trend of exercising to fitness centers also attracts people from neighboring villages. Based on an interview with one of the Argo Fitness members, he said that the reason he came to Argo Fitness was because he was curious and followed his friend to exercise. The trend of exercising to fitness centers seems to be the reason many people are curious and interested in the gym. Unfortunately, many of them do not use personal trainer services. This is evidenced by data on members who use personal trainer services at Argo fitness, namely 4 people or only 10 percent of the total monthly members.

Personal trainers are trainers or instructors whose job is to provide exercises to improve a person's fitness. According to (Abduljabar, 2011) personal trainers who have good education and experience will have ideas to convey the importance of health for fitness center members. A personal trainer has points that are closely related to training problems, including components or aspects of training, training principles, training methods and training periodization in addition to training forms (López-Sánchez et al., 2020). So it can be said that having a personal trainer for beginners is important. Unfortunately, many Argo Fitness members are not interested in having a personal trainer. Many of these members tend to practice with curiosity or just try it out. According to an interview with one Argo Fitness member, she only practiced by looking at Google and trying things out without a personal trainer.

An effective way to increase muscle strength and endurance is by using weights, because weight training can increase muscle mass so that it can increase muscle strength and endurance. Increased muscle strength can affect and improve several other biomotor components such as increased muscle endurance which aims to increase ability, to overcome fatigue during activities (Cakrawala & Agus, 2019). Exercises that are considered popular and easy by fitness players, especially at Argo Fitness Sedayu, are biceps cable and biceps barbell curl.

According to (Anggara & Perdima, 2021), the term exercise comes from an English word that can contain several meanings such as: practice, exercises, and training. The definition of exercise which comes from the word practice is an activity to improve sports skills (proficiency) using various equipment according to the goals and needs of the

sport. (Diana et al., 2017) state that weight training is a form of exercise that uses weighted media to support the training process with the aim of improving fitness, muscle strength, speed, muscle toning, muscle hypertrophy, post-injury rehabilitation, weight loss, and others.

Biceps cable exercise is an exercise to enlarge the biceps muscle and to increase arm muscle strength using the weightlifting exercise method using barbell media and carried out with the body standing (Gultom et al., 2022). Barbell curl exercise is a form of exercise aimed at increasing the strength and power of the arm muscles in particular, barbell curl which consists of biceps, radial flexor, barchio radialis. According to (Siedentop et al., 1994) can be done stimulantly or intermittently from a standing, sitting or supine position is a position to increase biceps. Barbell curls are a form of exercise that is commonly performed using an iron bar attached to both sides with plate weights. Delavier (2001:7) explains, "Stand, and keep your back straight and take an underhand grip on the bar with your hands slightly more than shoulder width." This means that the standing position of the hand grip is facing forward the distance between the hand grip is more than the shoulder.

As stated by (Cortis et al., 2020) (Cortis et al., 2020) drop sets are additional sets performed after completing the exercise with the usual sets in a particular exercise. As expressed by (Hettchen et al., 2021) that drop sets are an exercise technique that can only be done when we have reached the core set with the heaviest weight to failure-positive, then without rest, we immediately do the same type of exercise, but with a lighter weight to failure-positive again. The drop set method is indicated to improve muscle development. The main purpose of the drop set method is to put new and different stresses on the muscles until a state of hypertrophy/significant muscle mass growth can be achieved (Javadikasgari et al., 2019).

The study entitled the effect of barbell curl and dumbbell crul exercises on the formation of front arm muscles (biceps) at Gym Argo Fitness Padang City examines the problem that participants who join do not use trainers or coaches in gym training. They exercise on their own without a clear program, the trainer at Gym Argo Fitnes is still lacking. Gym exercises that are trial and error in nature can have an impact on training errors and muscle injuries. The results of the research in this study support researchers in finding differences in barbell curl training on biceps or arm muscles that have been found in the theoretical study. The results of this discovery can be a reference to the difference in biceps training, so there are differences in muscle mass results (Cooper, 2005) (DeVan et al., 2005).

The research conducted by Ethan Smith (2021) entitled Acute Effects of Exercise Variability on Muscle Thickness after one resistance training session was conducted to measure the acute effects of exercise variability on muscle thickness, and physical performance after two RT protocols using the same or different exercises for elbow flexors in recreationally trained individuals. The results of the research in this study support the researcher in finding a less significant but still noticeable difference when performing exercises using a biceps cable on a regular basis. It is hoped that these findings can serve as a reference to the results that can be found from biceps cable training on muscle mass gain.

While the research entitled The effect of weight training with the drop set method on increasing muscle mass in members at physical fitness Yogyakarta stems from the large number of people who do not know about weight training methods, especially the drop set method which is indicated for increasing muscle mass due to lack of knowledge about weight training and have not been able to determine the right training method in accordance with the purpose of muscle mass increase training. The results of the research in this study support the researcher in finding the effect of drop set method training on increasing muscle mass, although in this study it is focused on differences in

biceps cable and barbell curl. It is hoped that the results of this discovery can be a reference to the effect of the drop set method on increasing muscle mass.

Method

This research is a quasi-experiment research, researchers do not have the freedom to manipulate subjects, meaning that random groups are usually used as a basis for determining treatment and control groups. According to (Kingsolver & Huey, 2008) experimental research is recognized as the most scientific of all types of research because researchers can manipulate the treatment that causes something to happen. The research design used in this study is a "two group pretest-posttest design", which is research conducted on two groups (experimental group) with a comparison group (direct group). This research was conducted with pretest, treatment, and posttest. One group was given treatment by doing biceps cable weight training with the drop set method and biceps barbell curl with the drop set method. The program design of both is equivalent, the only difference is that group one uses biceps cable and group two uses biceps barbell curl.

This study compared the effectiveness of two types of biceps exercises with the drop set method, namely using cables (biceps cable) and barbells (barbell curl). These two exercises were chosen because they are both popular and effective in training the biceps muscle. The drop set method, which is the core of this study, involves gradually reducing the load in a set until it reaches a point where the muscle can no longer contract. The goal is to maximize muscle stimulation and promote muscle growth. Thus, this study aims to find out which of the two types of exercises is more effective in increasing biceps muscle mass when combined with the drop set method. Schoenfeld, B. J., Peterson, M. J., O'Connor, G. M., Sonmez, G. T., & Contreras, B. (2020).

Population is a generalization area consisting of objects or subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions (Sugiyono 2021). The population in this study were members of Argo Fitness Sedayu, Yogyakarta. The sampling technique uses purposive sampling, which is a sampling technique with certain considerations (Sugiyono 2021). These considerations include: (1) Members of Argo Fitness Sedayu Yogyakarta, (2) Male with an age range of 17-25 years, and (3) Willing to take part in training for 16 meetings. The sampling method used in this study is incidental sampling on members who use personal trainer services at Argo Fitness. According to (Sugiyono, 2021) incidental sampling is taking respondents by chance, namely anyone who happens to be suitable as a data source with the main criteria.

The instruments used in this study include various measurement methods and tools designed to obtain valid and reliable data. In this study, the main instruments used were pretest and posttest tests to measure changes in biceps muscle mass before and after treatment. In addition, tools such as biceps cables and barbell curls were used as part of the exercise intervention with the drop set method. To ensure that the data obtained had statistical accuracy, this study also applied several statistical tests, such as normality test with Kolmogorov-Smirnov to evaluate data distribution, homogeneity test using One-way ANOVA to ensure similarity of variance between groups, and t-test to test the hypothesis regarding the difference in effectiveness between biceps cable and barbell curl exercises. All statistical analyses were performed with the help of SPSS 26 software to improve the accuracy of data processing and interpretation. In addition, purposive sampling and incidental sampling approaches were used in the selection of participants by considering certain criteria, such as membership in Argo Fitness, gender, and willingness to participate in training for 16 sessions. With the combination of these

various instruments, this study can ensure that the results obtained are based on a systematic and accountable method.

This study uses several statistical tests to analyze the data. First, a normality test was conducted to ensure that the data obtained was normally distributed. This test uses the Kolmogorov-Smirnov Test. Furthermore, the homogeneity test was used to check whether the data variance between the experimental and control groups was the same. This test uses the One-way Anova test. Finally, hypothesis testing was conducted using the t-test to compare the means between the two groups. These tests were conducted with the help of SPSS 26 software.

Results & Discussion

Results

This research was conducted at the Argo fitness center located in Argomulyo, Sedayu, Bantul Regency, Yogyakarta Special Region on January 19 - February 19, 2024. The research subjects are Argo fitness members who are willing to be research samples. The subjects of this study amounted to 5 people. This study aims to determine the difference between biceps cable and biceps barbell curl exercises with the drop set method on Argo Fitness members. The results of the study were obtained based on the results of pretest and posttest biceps mass data using two different techniques, namely biceps cable and Barbell Curl on members at Argo Fitness.

The data normality test in this study used the Kolmogorov-Smirnov test. The criteria used to determine whether a distribution is normal or not is if $p > 0.05$ (5%) the distribution is declared normal, and if $p < 0.05$ (5%) the distribution is said to be abnormal. Homogeneity significance of $0.750 > 0.05$ indicates that the pretest variable is homogeneous, with Levene statistics 0.108. While the significant homogeneity of the posttest of $0.885 > 0.05$ indicates that the posttest variable is homogeneous, with Levene statistics 0.022. From the t-test results in table 8 above, the t-count result is $6.532 > t$ table 3.18245, and the significance value is $0.000 < 0.05$, so these results indicate that there is a significant difference. Thus, the alternative hypothesis (H_a) which reads "There is a significant effect of training using biceps barbell with drop set method on members of Argo Fitness Bantul", has been proven. From the t-test results in table 9 above, the results obtained t count $6.532 > t$ table 3.18245, and a significance value of $0.000 < 0.05$, these results indicate that there is a significant difference. Thus, the alternative hypothesis (H_a) which reads "There is a significant effect of training using barbell curls with the drop set method on members of Argo Fitness Bantul", has been proven.

Discussion

This study aims to analyze the effect of the effect of biceps cable training and biceps barbell curl with the drop set method on Argo Fitness members. The results of this study are broken down into 3 main aspects to answer the research questions that have been formulated, namely: biceps cable and biceps barbell curl, and the effect of biceps cable and biceps barbell curl exercises with the drop set method on Argo Fitness members. Referring to the results of the previous t test, in table 8 above, the results obtained t count $6.532 > t$ table 3.18245, and a significance value of $0.000 < 0.05$, then these results indicate there is a significant difference. So, it can be concluded that the alternative hypothesis (H_a) which reads "There is a significant effect of training using biceps barbell with the drop set method on members of Argo Fitness Bantul", is accepted, so it is tested. Considering the t test results in table 9 above, the results obtained t count $6.532 > t$ table 3.18245, and a significance value of $0.000 < 0.05$, these results indicate that there is a significant difference. So, it can be said that the alternative hypothesis (H_a) which reads "There is a significant effect of training using barbell curls with the drop set method on members of Argo Fitness Bantul", has been tested.

The results of this study are in line with the progressive overload theory. The drop set method used in this study allowed the subjects to continue working the muscles to the point of fatigue, even though the load was gradually reduced. This creates overload conditions that stimulate muscle growth Schoenfeld, B. J., Peterson, M. J., O'Connor, G. M., Sonmez, G. T., & Contreras, B. (2020). In addition, the findings of this study support the theory of muscle damage and repair. Intense drop set training can cause micro-damage to muscle fibers, which the body then repairs by synthesizing new proteins, resulting in bigger and stronger muscles (Burd, N. A., West, D. W., Nguyen, P., Willoughby, D. S., & Macdonald, M. R. 2020). Muscle mass growth or more commonly known as hypertrophy is a condition where muscle fibers increase in thickness. Maximum muscle fiber contraction occurs when all the muscles that are trained are completely used all to move the pressure of the load placed on that part of the muscle. (Lubis & Nugroho, 2020) states that weight training is a form of exercise that uses weight equipment media to support the training process with the aim of improving fitness, muscle strength, speed, muscle toning, muscle hypertrophy, post-injury rehabilitation, weight loss, and others. Weight training can be done with several methods, one of which is the drop set method. The drop set method is a technique in which one performs a series of reps with the same weight without significant rest between sets but reduces the weight gradually after reaching muscle fatigue in the previous set. The drop set method can be an effective strategy for increasing muscle mass if used appropriately in a comprehensive training program. Several weight exercises can use the drop set method, one of which is biceps cable and barbell curl.

Effect of Biceps Cable Exercise with the Drop Set Method

Biceps cable exercise is an exercise to enlarge the biceps muscle and to increase arm muscle strength using a weightlifting exercise method using barbell media and carried out with a standing body (Hakiki & Junaidi, 2022). Based on the results of the paired sample t test analysis on the biceps cable exercise, the t value is $6.532 > 3.18245$, and the p value ($0.000 < 0.05$), these results indicate that the t value is greater than the t table. Thus, the alternative hypothesis (H_a) which reads "There is a significant effect of training using biceps barbells with the drop set method on members of Argo Fitness Bantul", has been proven.

The biceps cable technique is one of the most effective exercises for developing muscle mass in the upper arm, specifically the biceps brachii muscle. One of the main advantages of using cables in biceps exercises is the consistent resistance throughout the movement. Unlike using dumbbells or barbells whose resistance can change depending on the position of the movement, cables provide resistance that remains constant because they run through a pulley system. Training with cables allows for a wider and freer range of motion compared to using other weights. This can help in maximizing the contraction of the biceps muscle at every phase of the movement, including at the full contraction (peak contraction) and extension phases. By utilizing consistent resistance with the drop set method, a wider range of motion, and the variety of exercises that can be performed, it can optimize biceps muscle growth and strength in an efficient and safe manner.

Effect of Barbell Curl Training with the Drop Set Method

From the t-test results in table 23 above, the results obtained t count $6.532 > t$ table 3.18245 , and a significance value of $0.000 < 0.05$, these results indicate that there is a significant difference. Thus, the alternative hypothesis (H_a) which reads "There is a significant effect of training using barbell curls with the drop set method on members of Argo Fitness Bantul", has been proven. Barbell curls are a form of exercise that is commonly done using an iron bar attached to both sides with plate weights. (López-Sánchez et al., 2019) explains, "Stand, and keep your back straight and take an underhand grip on the bar with your hands slightly more than shoulder width." This

means that the standing position of the hand grip is facing forward the distance between the hand grips is more than the shoulders. Barbell curls allow elbow flexion and shoulder flexion, both of which utilize normal function, and require no special equipment. So, barbell curls can be considered a functional exercise and are more flexible. Barbell curls allow a greater range of motion compared to some other exercises. It allows you to perform a wider range of motion, thus allowing the biceps muscle to perform maximal contraction both in the full contraction phase and in the extended phase. Using the principle of progressive overload is important in the development of muscle mass. By regularly increasing the weight lifted during barbell curl exercises, it will stimulate the muscles to grow and develop larger.

Differences in Biceps Cable and Barbell Curl Exercises with Drop Set Method

Biceps cable curl and barbell curl are two effective exercises for developing the biceps brachii muscle, but they have differences in terms of movement mechanics, use of weights, and the type of stimulus given to the muscles. Using a cable and pulley system, the biceps cable curl provides constant resistance throughout the movement. This contrasts with barbell curls which may experience resistance changes depending on the position of the barbell. Barbell curls use a stable barbell weight, but the resistance may change depending on the elbow angle and movement position. This may affect the contraction intensity of the biceps muscle at different points of the movement. Biceps cable has a free range of motion. The cable allows a freer and more varied range of motion. It can adjust the body position and angle of the cable to target the biceps muscle from different angles, whereas barbell curls require greater stabilization, as you must control the weight with two hands and maintain body balance during the movement.

The Biceps Cable Curl places more emphasis on isolating the biceps muscle. With constant resistance and a more flexible range of motion, cable curls can help activate the biceps muscles in a more focused manner without involving too many supporting muscles. Barbell curls involve more stabilizer muscles and support muscles such as deltoids, trapezius, and core muscles to maintain balance and stabilization during the movement. This makes barbell curls more effective for training coordination and total body strength. The biceps cable curl is easier to adjust the load precisely with the cable. The pulley system allows for finer load adjustments, to choose the right resistance according to the needs of the exercise. Whereas barbell curls require coarser load adjustment by increasing or decreasing the weight plate on the barbell. It may take longer to adjust the load appropriately compared to using cables. Biceps cable curls can be performed in many variations, including different grips (wide-grip, close-grip) and different angles to target the biceps muscle from different directions. These variations help to avoid plateaus and provide different stimuli for muscle growth. While barbell curls can be performed with variations such as wide or narrow grip, they tend to be more limited in movement variation compared to using cables. However, they are still effective for developing overall biceps strength and muscle mass.

In this study, the more effective effect of biceps cable curl and barbell curl exercises with the drop set method is barbell curl. This can be seen from the mean obtained from the post-test, namely from biceps cable curl 32.40 while barbell curl gets a mean of 33.00. In addition, this can be seen from the percentage increase in muscle mass from biceps cable curl of 10.95% while barbell curl gets a percentage of 12.24%. Based on the results of research and calculations, it can be concluded that biceps cable and barbell curl weight training with the drop set method influences increasing muscle mass in members at Argo Fitness Sedayu.

Conclusion

The study found that biceps barbell curl training with the drop set method is effective in increasing biceps muscle mass in Argo Fitness members. This is supported by theories such as progressive overload, muscle damage and repair, and hormonal response. The drop set method allows for high training intensity and sufficient volume, stimulating muscle growth. Both biceps cable curl and barbell curl exercises significantly increase biceps muscle mass. However, barbell curl training provides a slightly better effect than biceps cable curl, with higher average muscle mass increase and percentage increase. Both exercises can be effective for increasing biceps muscle mass, but barbell curl training may be a better alternative.

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